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(71) Applicant(s)

Jacquard Weaving Company Limited
(Incorporated in the United Kingdom)
Withnell Mill, Bury Lane, Withnell, CHORLEY, Lancs,
PR6 8UA, United Kingdom

(72) Inventor(s)

Peter Ramsbottom

(74) Agent and/or Address for Service

McKnight & Lawrence
Regent House, Heaton Lane, STOCKPORT, Cheshire,
SK4 1BS, United Kingdom

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(54) Abstract Title

Making applique items

(57) Appliqué items comprising decorated cut out panels of face material laminated to backing material are made by preparing a width of face material (12) decorated in multiple panels (11) across its width on a face material preparation machine, laminating the thus-prepared face fabric to a backing fabric (13) continuously with the production of the decorated face material, and cutting out the panels from the laminated fabric. The face material may be a jacquard woven fabric and the preparation machine may a jacquard loom. The panels may be cut out from the laminated fabric by a laser cutting head (42) on a gantry (43).

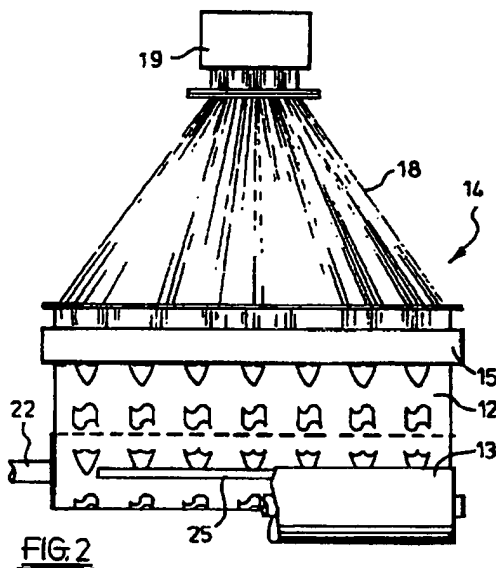


FIG. 2

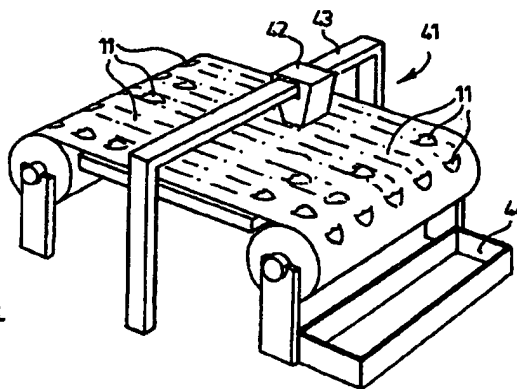


FIG. 4

GB 2 337 724 A

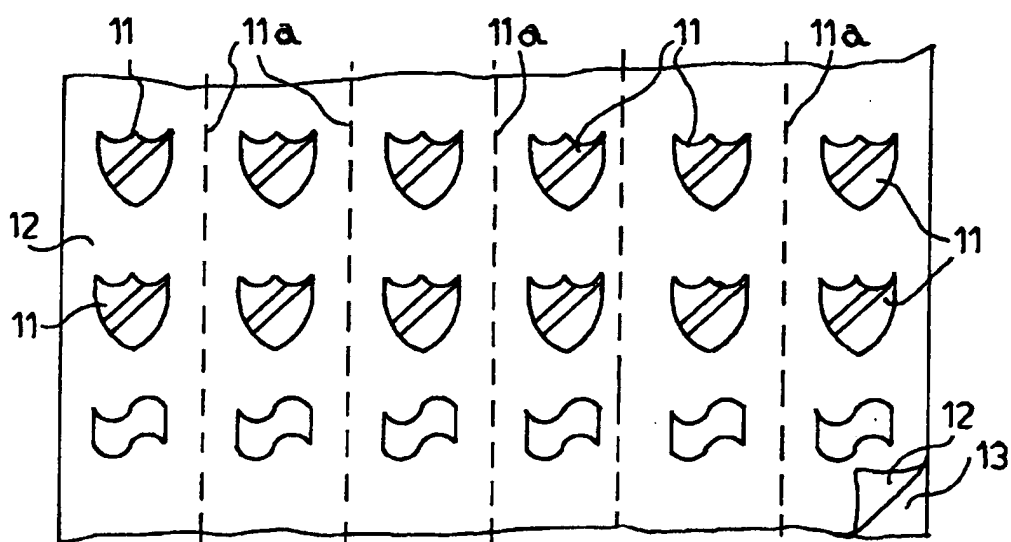
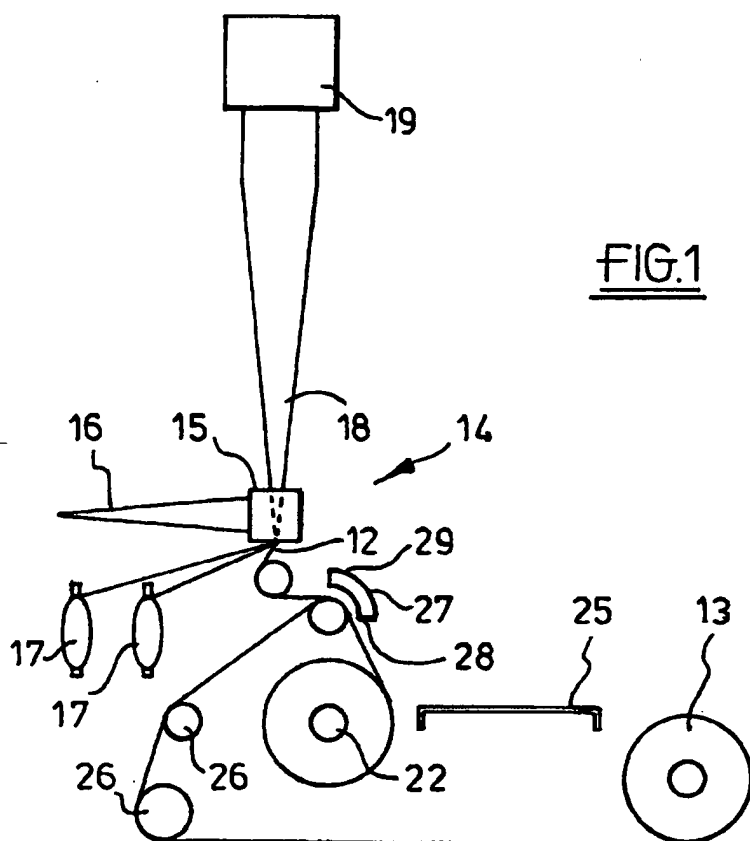
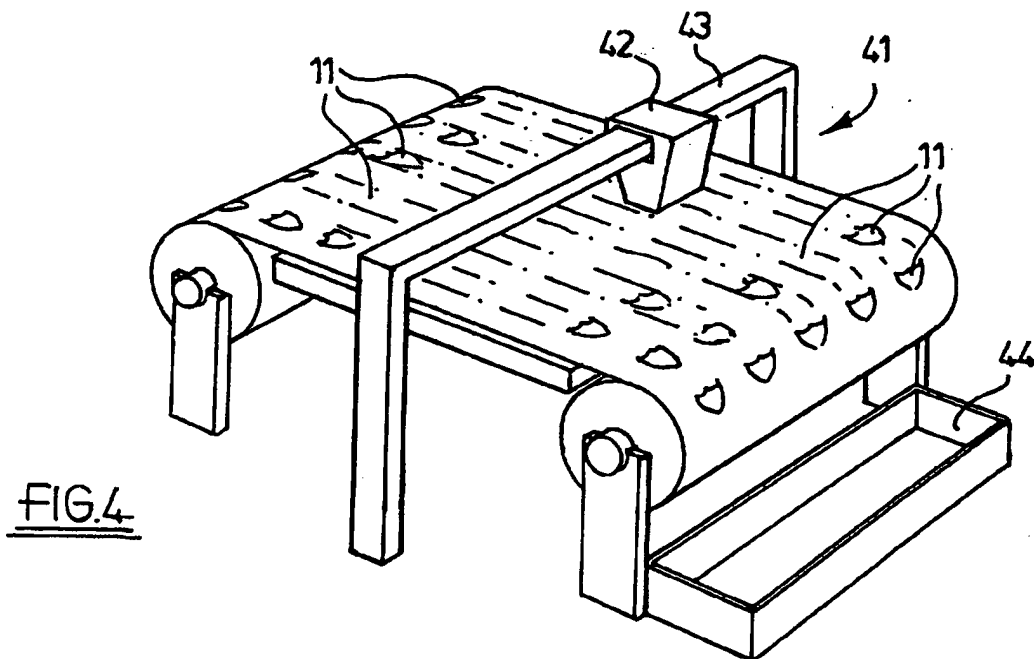
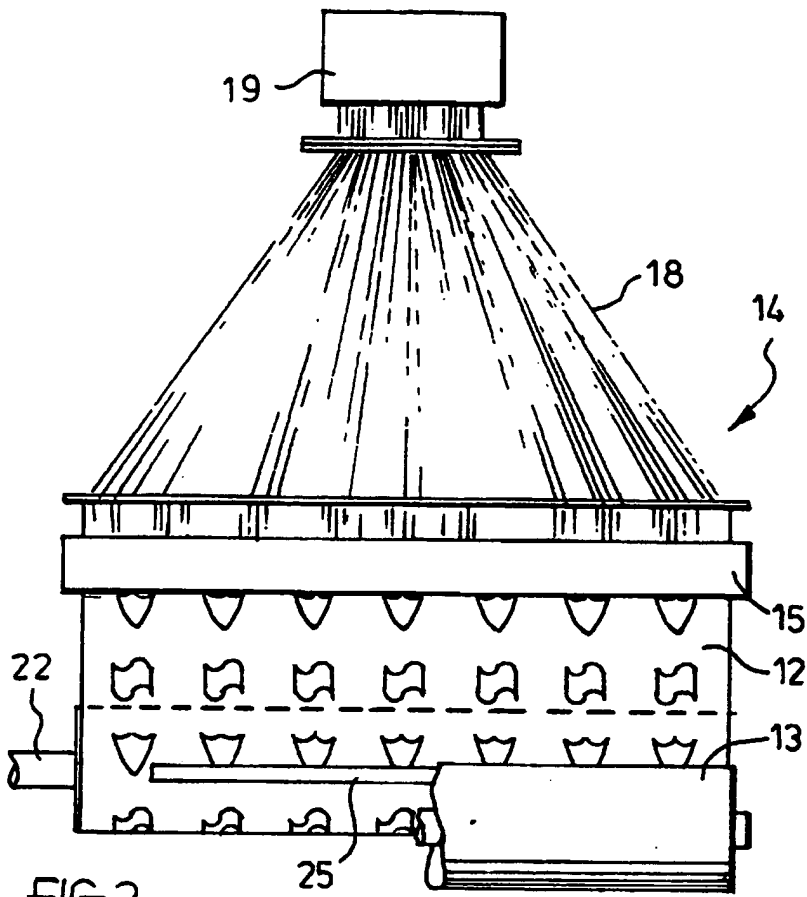


FIG.3



METHODS AND APPARATUS FOR MAKING APPLIQUE ITEMS

This invention relates to methods and apparatus for making appliqué items such for example as blazer and cap badges and garment labels.

Conventionally, such items are made on a jacquard weaving machine, in the case of woven items, which weaves multiple 'decorated' panels - the badges or labels - across the width of the machine and slits the fabric into narrow fabric strips each containing a single column of the panels, before taking up the fabric on rolls.

The rolls are then taken to another machine where they are laminated to backing fabric. Finally, the individual panels are cut out from the backed rolls by a "pastry cutter" arrangement using dies appropriate to the desired shape of the finished panel. The cut edges, particularly of badges, may then need to be overlocked.

It has been proposed to use a laser device for cutting out the panels, avoiding the need for an inventory of dies and the need to make new dies for new panel shapes. The laser can also effectively 'seal' the cut edge (depending on the textile materials used) and avoid the need for overlocking.

However, the process is still dependent on multiple handling stages at each of which time and skill are required with the incidence of alignment errors leading to faults and waste.

The present invention provides improved methods and apparatus for making such appliqué items comprising decorated cut out panels of face material laminated to backing material comprising preparing a width of face material decorated in multiple panels across its width on a face material preparation machine and laminating the thus-prepared face fabric to a backing fabric continuously with the production of the

decorated face material, and cutting out the panels from the laminated fabric.

The face material may be a jacquered woven fabric and the preparation machine a jacquard loom, such as dedicated jacquard label weaving loom.

The backing fabric with laminating adhesive and the face fabric may be brought together and heat and/or pressure laminated on the preparation machine. The laminated fabric may be wound up on the preparation machine.

The backing fabric may be a non-woven fabric such as a stitch bonded fabric.

The panels may be cut out, as already proposed, by a laser. However, the laser can now operate on full width fabric, resulting in higher productivity. The laser can be guided according to a predetermined program to cut out the appropriate shapes and can utilise machine vision for example for precise location of the cutting path and even for selection of the appropriate cutting outline according to the shape of the panel. In some cases, the laser may be guided by machine vision to follow the edge of the woven panel without the necessity of specifying a cutting path in coordinates. Such systems are described for example in US Patent 5 095 835.

The invention also comprises apparatus for making appliqué items comprising decorated cut out panels of face material laminated to a backing material, comprising:

- a decorated face material production machine adapted to produce a width of face material decorated in multiple panels across the width;
- a supply for backing fabric;

- a laminating arrangement laminating backing fabric from the supply thereof to the face fabric across its width; and
- panel cut out means cutting out panels from the width of laminated fabric.

Said machine may comprise a jacquard weaving machine, which may be of conventional design but modified by incorporation of the full-width laminating equipment and removal or deactivation of the slitters, and such modification as is required to feed the backing fabric and take up the laminated fabric. The panel cut out means may operate batchwise on laminated fabric produced by the machine, and indeed one panel cut out arrangement may cope with the production of several, maybe ten or so, jacquards, especially if the cut out means comprise a laser controlled by a control arrangement to cut out panels of desired predetermined outline as referred to above.

Embodiments of apparatus and methods for making appliqué items according to the invention will now be described with reference to the accompanying drawings, in which:-

- Figure 1 is a diagrammatic side elevation of a jacquard label making machine modified in accordance with the invention;
- Figure 2 is a diagrammatic front elevation of the machine of Figure 1;
- Figure 3 is a face-on view of a machine-wide fabric, backed, as produced by the machine of Figures 1 and 2; and
- Figure 4 is a diagrammatic illustration of a laser cut out arrangement for the fabric of Figure 3.

The drawings illustrate methods of and apparatus for making appliqué items 11 (Figures 3 and 4) such as blazer and cap badges and labels for garments which comprise cut out panels of face material 12 laminated to backing material 13.

The method comprises preparing a width of face material 12 decorated in multiple panels 11 across the width on a face material preparation machine 14 (Figures 1 and 2) which is in this case a jacquard label machining machine.

Such a machine comprises a shedding arrangement 15 to which warp 16 and weft 17 yarns are supplied, the warp passing through heddles and reeds under the control of a harness 18 worked by a jacquard mechanism 19 which nowadays is usually electronic rather than as Mr Jacquard originally devised.

The woven fabric is usually slit into strips each containing a single column of the items 11, that is to say along broken lines 11a in Figure 3, by slitters located in the region 21 (Figures 1 and 2) but not shown as they are discarded or deactivated for present purposes. The strips are then conventionally wound up on rolls perhaps sixteen or so rolls on a machine-wide cloth beam 22, here utilised differently.

The machine, for present purposes, is modified by the addition of a support 23 for a supply of backing fabric 24 - a non-woven fabric such as a stitch bonded fabric coated with a heat and/or pressure activated adhesive is very suitable. The backing fabric 13 is fed beneath a walkway 25 over rollers 26 to come together with the woven face material 12 freshly produced from the loom at a laminating station 27 comprising a backing roller 28 and a heater press 29 which can be retracted away from the roller 28 when the machine is stopped so that any fabric intermediate the roller 28 and heater press 29 is not overheated, and for threading-up purposes.

In contradistinction to the conventional arrangement therefore, in which the jacquard machine produces strips of individual columns of items on face fabric, the inventive modification enables the machine to produce a machine width of ready-backed fabric with multiple columns of items.

Whilst the items on the fabric may be all identical, it is not necessarily so inasmuch as the jacquard may be readily adapted to produce different items in different rows and/or columns of the face fabric. Electronic jacquards are especially adapted to short runs and frequent design changes.

One effect of this is, of course, that items of different width can be accommodated without having to strip the machine down to change slitter spacing - since the fabric is not cut into strips, it does not matter how wide the appliqué items are nor is it necessary that all the items on a sheet be of the same width, so that great flexibility of manufacturing results.

The laminated fabric rolled up on the jacquard machine 14 is eventually taken on the roll to the laser cutter arrangement 41, Figure 4, which has a laser cutter head 42 on a gantry 43 so that it can be moved width wise of the fabric. For the cutting path following action, the laser beam may be steered by a galvanometer mirror arrangement, not shown, but conventional, and the fabric transported warp - or lengthwise beneath the gantry from its loom take-up roll to another take-up arrangement, the cut out appliqué items 11 being separated from the fabric and falling into a receptacle 44.

It will be appreciated that other forms of fabric preparation machines may be employed, for example printing or embroidery machines, and that cut out arrangements other than laser cutters may also be used.

CLAIMS

1. A method for making appliqué items comprising decorated cut out panels of face material laminated to backing material comprising preparing a width of face material decorated in multiple panels across its width on a face material preparation machine and laminating the thus-prepared face fabric to a backing fabric continuously with the production of the decorated face material, and cutting out the panels from the laminated fabric.
2. A method according to claim 1, in which the face material is a jacquard woven fabric, and the preparation machine is a jacquard loom.
3. A method according to claim 1 or claim 2, in which the backing fabric width laminating adhesive and the face fabric are brought together and heat and/or pressure laminated on the preparation machine.
4. A method according to claim 3, in which the laminated fabric is wound up on the preparation machine.
5. A method according to any one of claims 1 to 4, in which the backing fabric is a non-woven fabric.
6. A method according to claim 5, in which the backing fabric comprises a stitch bonded fabric.
7. A method according to any one of claims 1 to 6, in which the panels are cut out by a laser.

8. Apparatus for making appliqué items comprising decorated cut out panels of face material laminated to a backing material, comprising:

- a decorated face material production machine adapted to produce a width of face material decorated in multiple panels across the width;
- a supply for backing fabric;
- a laminating arrangement laminating backing fabric from the supply thereof to the face fabric across its width; and
- panel cut out means cutting out panels from the width of laminated fabric.

9. Apparatus according to claim 8, in which said machine comprises a jacquard weaving machine.

10. Apparatus according to claim 8 or claim 9, in which the machine has a laminated fabric take up arrangement and the panel cut out means operates batchwise on laminated fabric produced by the machine.

11. Apparatus according to claim 10, comprising multiple laminated fabric machines and one panel cut out means.

12. Apparatus according to any one of claims 8 to 11, in which the panel cut out means comprise a laser.

13. Apparatus according to claim 12, in which said laser is controlled by a control arrangement to cut out panels of desired predetermined outline.



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Claims searched: 1 to 13

Examiner: R.J.MIRAMS
Date of search: 27 July 1999

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

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Other: ONLINE: WPI, EPODOC, JAPIO.

Documents considered to be relevant:

| Category | Identity of document and relevant passage | Relevant to claims |
|----------|---|--------------------|
| A | DE2340242A (Stang) | |
| A | DE2100835A (Konig) | |

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